AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph beginning on page 1, line 10 with the following replacement paragraph:

--Position-measuring systems play an ever more important role in this increasingly automated world. They furnish the basis for exact positioning of drive systems in many applications, for example, in the field of machine tools. The optical position-measuring systems described herein are based on scanning a scale that has a measuring standard in the form of a line grating. The scanning head used for this includes a light source from which light falls on the scale ~~graduation~~ grating via a transmitting grating. After the interaction with the transmitting grating and the scale grating, the light has a spatial intensity pattern which is able to be detected in the scanning head using a receiving grating and is able to be used for position determination.--.

Please replace the paragraph beginning on page 2, line 1 with the following replacement paragraph:

--Four signals may be generated that are offset by 90 degrees with respect to each other in each case, from which, in a sequential electronic system, counting signals ~~connoted~~ connected with direction may be derived. In response to the shifting of the scale relative to the scanning head, the individual phase-shifted signals change as a function of position.--.

Please replace the paragraph beginning on page 2, line 8 with the following replacement paragraph:

--Usually, from the four output signals mentioned, first of all two signals shifted by 90 degrees with respect to each other and free from offset errors, amplitude errors and phase errors are synthesized, which are suitable for a finer subdivision and interpolation. The counting signals ~~connoted~~ connected with direction are able to permit therewith a substantially finer position determination than would be possible, for example, by counting the maxima and/or minima of the intensity pattern at the photosensitive areas of the scanning head.--.

Please replace the paragraph beginning on page 5, line 26 with the following replacement paragraph:

--Figure 1a illustrates a scale 2, which carries an optical grating on a substrate 2.1, which is also to be designated as scale ~~graduation~~ grating 2.2. Such a scale ~~graduation~~ grating 2.2 is able to exist, for example, as an amplitude grating having opaque crosspieces made of chromium and light transmitting gaps in the chromium coating. In this context, substrate 2.1 may be developed to be light-transmitting or, as illustrated, reflecting. Other scales 2 are also able to have a phase grating or a combination of phase grating and amplitude grating.--.

Please replace the paragraph beginning on page 6, line 29 with the following replacement paragraph:

--The photosensitive areas forming receiving grating 1.7 are separated from one another in that n-layer 1.2.3 having bottom contacts 1.4 are interrupted where a separation of the individual photosensitive areas for detecting the intensity pattern are provided. Only in the region of bottom contacts 1.4 is current generated in semiconductor layer stack 1.2 in response to illumination, and so bottom ~~contacting~~ contact 1.4 defines receiving grating 1.7.--.

Please replace the paragraph beginning on page 7, line 4 with the following replacement paragraph:

--As illustrated in Figure 1b, the patterning of bottom ~~contacting~~ contact 1.4 and n-layer 1.2.3 is able to take place in a single lithography step and an etching step each for bottom contacts 1.4 and semiconductor layer stack 1.2. As the etching method for semiconductor layer stack 1.2, wet etching methods (e.g., KOH solution) or dry etching methods (e.g., RIE using CHF_3) may be used. Such methods are widespread in microelectronics.--.

Please replace the paragraph beginning on page 9, line 4 with the following replacement paragraph:

--For a period P = 40 µm of the intensity pattern of the irradiated light, there thus comes about a scale division T of at least 50 µm. The individual phase-shifted signals are therefore gathered from four different periods of the intensity pattern, and thus also from different ranges of scale ~~graduation~~ grating 2.2. Therefore, this type

of patterned detector is designated as a four field sensor. It may have the disadvantage that contamination on the scale take effect on phase-shifted signals not at the same time, but offset in phase. This may result in inaccuracies during the evaluation of the phase-shifted signals.--.

Please replace the paragraph beginning on page 10, line 24 with the following replacement paragraph:

--Figure 2d illustrates an arrangement of such a scanning head 1 having a dual field sensor. Transmitting grating 1.5 is arranged at the center of the dual field sensor. By "center", the center of area of receiving grating 1.7 should be understood. Quadratic transmitting grating 1.5, in this context, is completely surrounded by receiving grating 1.7, in order to utilize as well as possible intensity pattern L. The grating lines of transmitting grating 1.5 and receiving grating 1.7 are perpendicular to measuring direction M. Receiving grating ~~1.4~~ 1.7 is subdivided into four areas. Of the two inner areas, which border directly on transmitting grating 1.5, one is used for gathering 0 degree/180 degree signals, and the other of the two for gathering 90 degree/270 degree signals. An additional 90 degree/270 degree area, facing away from transmitting grating 1.5, borders on the inner 0 degree/180 degree area. An additional 0 degree/180 degree area, facing away from transmitting grating 1.5, borders on the inner 90 degree/270 degree area. This arrangement antisymmetric to the measuring direction makes certain that the four phase-shifted signals are picked up at comparable intensities.--.

Please replace the paragraph beginning on page 12, line 16 with the following replacement paragraph:

--From the view in Figure 3b it is illustrated that such a single field sensor may no longer do without crossed-over printed conductors. Photosensitive areas 3 do carry a bottom contact 1.4 on their reverse side, which is allowed to be connected to the printed conductors only at certain locations, using ~~contactings~~ contacts 5. Between photosensitive areas 3 and printed conductors 4, an insulating layer thus has to be brought in which is only interrupted at ~~contactings~~ contacts 5. ~~Contacting~~ Contact 5 is simply formed by printed conductors 4 coming into contact directly with bottom contacts 1.4, when the metal layer forming printed conductors 4 is deposited.--.

Please replace the paragraph beginning on page 13, line 31 with the following replacement paragraph:

--Figure 3d illustrates an arrangement of the ~~contacting~~ contact of photosensitive areas 3 that is to be recommended as an alternative, and especially so for small scale divisions T of receiving grating 1.7 of the single field sensor. At the edge of receiving grating 1.7, grating lines having enlargements are provided. Since every other grating line is lengthened, it is possible to make these enlargements twice as wide as the grating lines themselves. This may greatly simplify the ~~contacting~~ contact of photosensitive areas 3 with printed conductors 4 via ~~contactings~~ contacts 5. Again, it may be seen that such a single field sensor cannot be produced without crossover printed conductors 4.--.